

Korean Species of the Genus *Ypsolopha* Latreille (Lepidoptera, Yponomeutidae)

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Abstract The Korean species of the genus *Ypsolopha* Latreille are reviewed. A total of 10 species is recognized. Among them, three species, *Y. cristatus* Moriuti, *Y. japonicus* Moriuti, and *Y. parenthesesellus* (Linnaeus) are recorded for the first time from Korea. Collecting data and biological informations for the species are given, and external characteristics and genital structures for the newly known species are redescribed and illustrated.

Key words Lepidoptera, Yponomeutidae, *Ypsolopha*, Systematics, new record, Korea

INTRODUCTION

Ypsolopha Latreille is one of the large genera of the family Yponomeutidae. More than 120 species of the genus are distributed mainly in the Holarctic Region. Larvae feed on buds, leaves of the conifers and dicotyledonous plants (Moriuti, 1977, 1982; Park, 1983b), and some species bore into buds, shoots or petioles or mine leaves.

In Korea, Park (1983a) reported four species of the genus for the first time, Jeong *et al.* (1995) added *Y. longus* Moriuti, and Park (1994) listed six species with report of an additional species, *Y. parallelus* (Caradja). Recently Byun and Park (2001) described a new species, *Y. nigrimaculatus*. In the review of the Korean species of genus *Ypsolopha*, 10 species are recognized. Among them, three species, *Y. cristatus* Moriuti, *Y. japonicus* Moriuti, and *Y. parenthesesellus* (Linnaeus), are reported for the first time from Korea. All available collecting data are given with some taxonomic and biological comments. External characteristics and genitalia for the newly known species are briefly redescribed with illustrations.

Materials examined are on the basis of the collections of the following institutions (abbreviations in bracket): the Forest Museum, National Arboretum [KNA]; Department of Biology, University of Incheon [UIB]; Center for Insect Systematics, Kangweon National University [CIS]; National Institute of Agricultural Science and Technology, Suwon [NIAS]. Abbreviations for the provincial names are as follows: GG- Gyeonggi; GW- Gangweon; CB- Chungbuk; GN- Gyeongnam; JJ- Jeju.

SYSTEMATIC ACCOUNTS

***Ypsolopha* Latreille, 1796**

Type species: *Phalaena Tinea vittella* Linnaeus, 1758.

***Ypsolopha acuminatus* (Butler, 1878) 줄무늬좁나방**

Chilo acuminatus Butler, 1879, Ill. Spec. Lep. Het. Coll. Br. Mus. 2: 61, pl. 40: fig. 1. Type locality (TL): Japan.

Ypsolopha acuminatus: Moriuti, 1977: 111, figs 29, 163, 184, 244, 398; Moriuti, 1982, 1: 209, 211, 2: 195, pl. 8: 36; Park, 1983a: 67; Park, 1983b: 529, 927, pl. 35: 604, fig. 184; Park, 1994: 324.

Wingspan 25–27 mm. For the description of this species, see Moriuti (1977) and Park (1983b).

Materials examined. [KNA] GG– 1 ♂, 2 ♀, Gwangleung, 13 X 1982 (KJ Won); 2 ♂, 1 ♀, Gwangleung, 21 IV 1983 (KJ Won). GW– 1 ♂, Chuncheon, 10 V 1990 (KT Park); 1 ♂, Jiamri near Chuncheon, 24 X 1993 (BK Byun). [NIAS] Seoul– 1 ♀, Seoul, 28 II 1982 (KT Park). GG– 2exs, Yongin, 21 IV 1976 (K.T. Park); 1ex, Namhansansung, 6 X 1974 (KT Park); 2exs, Namhansansung, 6 XI 1974 (YI Lee); 6exs, Gwangleung, 5 XI 1974 (YI Lee); 1 ♂, Suweon, 7 VI 1981 (KR Choe). GW– 1 ♂, Jiamri, Chuncheon, 24 X 1993 (BK Byun); 1 ♂, Chuncheon, 10 V 1990 (BK Byun).

Distribution. Korea and Japan.

***Ypsolopha albimaculatus* Byun et Park, 2001 검은점무늬좁나방**

Ypsolopha albimaculatus Byun et Park, 2001, Korean J. Syst. Zool. 17(1): 66. TL: Korea.

Wingspan 22–25 mm. For the description of this species, see Byun and Park (2001).

Materials examined. [CIS] GW– 10exs, Mt. Gyeong-gang-san, 2 VIII 1989 (KT Park); 1 ♂, Mt. Gyeong-gang-san, 24 VIII 1989 (KT Park); 2 ♂, Mt. Yaksu-san, 8 VIII 1989 (KT Park); 3 ♂, Mt. Odae-san, 6 VIII 1989 (BK Byun); 1 ♂, 1 ♀, Pyongchang, 31 VII 1991 (KT Park). GG– 2 ♂, Gapyong, 21 V 1983 (KT Park); 1 ♂, Mt. Myeongji-san, 5 VII 1999 (GH Lee). GN– 1 ♂, Mt. Jiri-san, 22 VII 1981 (SG Lee).

Distribution. Korea (Central).

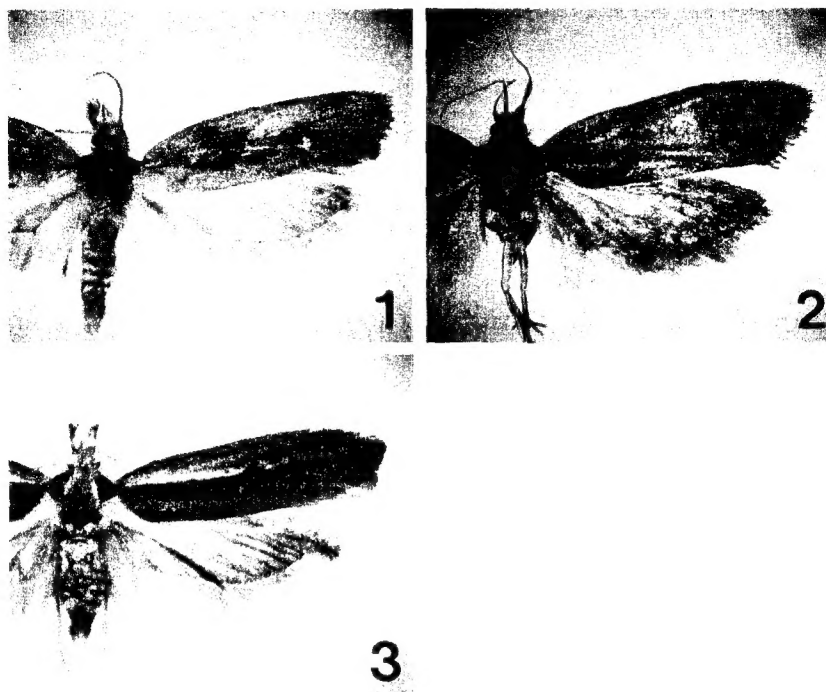
Remarks. The species is superficially similar to *Y. strigosus* B., but can be distinguished by the longitudinal white streak, ending at 2/3 of the forewing and an well-developed dark fuscous dot at the end of the white streak.

***Ypsolopha blandellus* (Christoph, 1882) 갈고리좁나방**

Cersotoma blandella Christoph, 1822, Bull. Soc. Imp. Nat. Moscou 57(1): 14.

Ypsolophus blandella: Moriuti, 1964: 203; Moriuti, 1977: 96; Moriuti, 1982, 1: 210, 2: 195, pl. 8: 28; Park, 1983a: 66; Park, 1983b: 527, 926, pl. 35: 601; Park, 1994: 325.

Wingspan 20–22 mm. For the description of this species, see Moriuti (1977) and Park (1983b).



Figs 1-3. Adults: 1. *Ypsolopha cristatus* Moriuti; 2. *Ypsolopha japonicus* Moriuti; 3. *Ypsolopha parenthesellus* (Linnaeus).

Materials examined. [KNA] GW- 1 ♀, Chuncheon, 13 VI 1990 (BK Byun). [CIS] GW- 1 ♀, Chuncheon, 6 X 1992 (KT Park & BK Byun); 1 ♂, Chuncheon, 15 VI 1992 (KT Park). [UIB] GG- 1 ♀, Mt. Suri-san, 28 VIII 1997 (Jeon, Lee, Lee & Choi). CB- 2 ♂, Mt. Gaya-san, 15 VI 1997 (Bae, Paek, Lee & Ahn). [NIAS] GG- 2exs, Mt. Cheongyae-san, 12 VIII 1976 (KT Park); 2exs, Mt. Cheongyae-san, 19 VIII 1976 (KT Park); 1 ♂, Gwangleung, 8 VI 1977 (KR Choe); 1 ♂, 1 ♀, Gwangleung, 8 VI 1977 (JSLee). GW- 2 ♀, Chuncheon, 6 X 1992 (KT Park & BK Byun). JN- 1 ♀, Mt. Jiri-san, 22 VII 1981 (SG Lee).

Distribution. Korea, Japan, Russia (Amur), and China.

***Ypsolopha cristatus* Moriuti, 1977 얼룩무늬좁나방 (신칭)**

(Figs 1, 4, 6)

Ypsolopha cristatus Moriuti, 1977, Fauna Japonica Yponom.: 89, figs 14, 232, 387. TL: Yumoto, Japan.

Wingspan 22–23 mm (Fig. 1). Head and thorax grayish white. Antenna dark purplish brown, with tips of tooth-like scales on distal half and dotted with white on apical half; scape gray. Forewing with apex sub-acutely produced and suffused with a mixture of whitish and grayish scales on basal area; costal portion with conspicuous white suffusion from near middle to before apex; small white or grayish suffusion around apex costally; terminal area with tiny blackish brown scales; costa marked with

approximately six strigulae of raised blackish fuscous scales on basal half, and another six fine blackish strigulae on distal half; cilia dark fuscous, mixed with white and gray scales, and gray on termen, with a golden ochreous apical line. Hindwing light gray, rather paler basally; cilia light whitish yellow, with light gray portion basally.

Male genitalia (Figs 4, 4a). Valva oval; sacculus narrow, weakly sclerotized. Saccus slender, long, somewhat bulbed at anterior end. Aedeagus 1.3 times as long as valva, slightly curved at apical 2/3; coecum penis very long, straight, about 1/3 of aedeagus in length; cornuti with a cluster of many strong spinules.

Female genitalia (Figs 6, 6a). 8th segment rather short. Ostium bursae wide; antrum and 8th membranous, large, cupped; ductus bursae membranous, widening anteriorly, and denticulated except for portion between antrum and inception of ductus seminalis; corpus bursae ovate; inception of ductus seminalis well before antrum. Signum with two thickenings connected by a slender band.

Materials examined. [KNA] GW- 1 ♂, Chuncheon, 19 VI 1994 (BK Byun); 1 ♀, Mt. Gyeonggang-san, 2 VIII 1995 (BK Byun); 1 ♀, Dunnae, Wonju, 7 VII 1990 (HY Choi); 2 ♂, Hwengsung, 22 VIII 1994 (BK Byun). [NIAS] GW- 1 ♂, Hwengsung, 22 VIII 1994 (BK Byun); 1 ♀, Mt. Odae-san, 2 IX 1995 (BK Byun).

Distribution. Korea (new record) and Japan.

Remarks. This is a striking species with the conspicuous tufts of raised scales.

***Ypsolopha japonicus* Moriuti, 1964 검은띠좁나방 (신칭)**

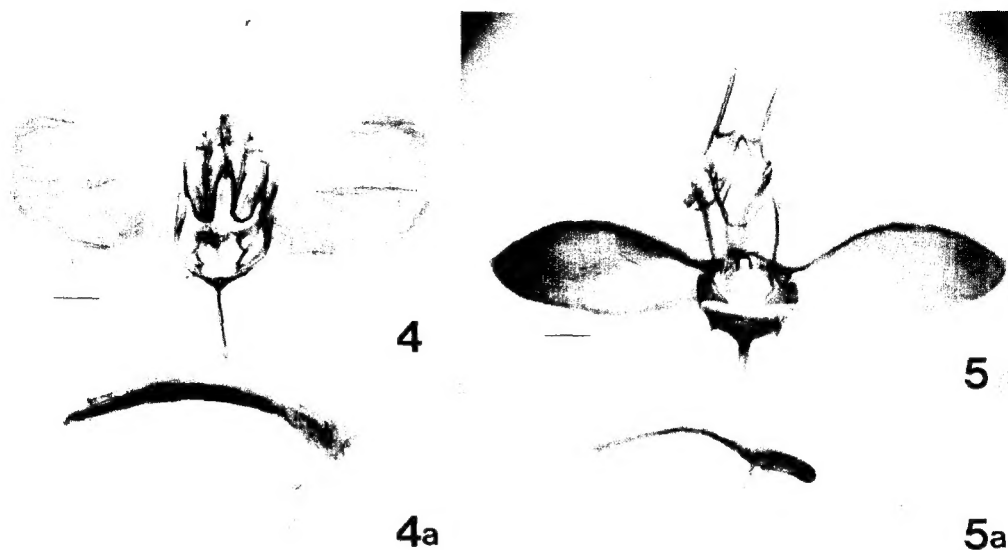
(Figs 2, 7)

Ypsolophus japonicus Moriuti, 1964: 199, fig. 7, pl. 7, fig. 1; Moriuti, 1977: 80, figs 8, 381; Moriuti, 1982, 1: 209, 2: 195, pl. 8: 19. TL: Honshu, Japan.

Wingspan 22–25 mm in female (Fig. 2). Head pale gray, with a longitudinal fuscous streak in middle of crown. Antenna fuscous, dotted with white scales; scape whitish gray, mixed with dark brown. Palpus pale gray, irrorating with dark brown. Thorax whitish gray, with a longitudinal dark gray streak laterally; tegula infuscated. Forewing with R_4 and R_5 separated; whitish gray; scattered with blackish and brownish scales; extreme costal edge blackish towards base; some blackish transverse strigulae along costa on basal half; a fuscous streak along dorsum from base to before tornus, forming triangular projections upwards before and beyond middle; a small fuscous spot near tornus; termen with several fuscous dot, with two darker shades along termen, Hindwing gray, darker posteriorly; cilia pale ochreous gray, with a gray basal line.

Female genitalia (Figs 7, 7a). 8th–10th abdominal segments very long. Ostium bursae wide; antrum membranous, large, cup-shaped. Ductus bursae long, posterior half being studded with denticles and narrower than the anterior half, which is not stubbed. Corpus bursae large, elongated ovate; ductus seminalis arising from beyond antrum; signum with two ridges.

Materials examined. [KNA] GG- 1 ♂, 4 ♀, Gwangneung, 22 IX 1994 (BK Byun). GW- 2 ♀, Unduryong, Mt. Gyeonggang-san, 13 VIII 1995 (BK Byun); 1 ex, Mt. Gyeonggang-san, 1 IX 1995 (BK Byun). GG- 1 ♀, Gwangneung, 13 VIII 1994 (BK Byun). [CIS] GW- 1 ex, Mt. Gyeonggang-san, 24 VIII 1989 (K.T.



Figs 4-5. Male genitalia: 4. *Ypsolopha cristatus* Moriuti; 5. *Ypsolopha parenthesellus* (Linnaeus). Scale bars: 0.5 mm.

Park). [NIAST] GW- 3 ♀, Mt. Odaesan, 2 IX 1995 (BK Byun).

Distribution. Korea (new record) and Japan.

Remarks. The species is very similar to *Y. vittellus* (Linnaeus), but can be easily distinguished by the larger size and the shape of ductus bursae in the female genitalia.

***Ypsolopha longus* Moriuti, 1964** 큰좁나방

Ypsolopha longus Moriuti, 1964: 207, figs 4, 17, pl. 7: 6; Moriuti, 1982, 1: 211, 2: 195, pl. 8: 34, 35, 251: 4. TL: Sigakogen, Sinano, Japan.

Wingspan 22–31 mm. For the description of this species, see Moriuti (1964).

Materials examined. [KNA] GG- 1 ♂, Gwangleung, 7 IV 1988 (KJ Weon); 2 ♀, Gwangleung, 12 IV 1988 (KJ Weon).

Distribution. Korea and Japan.

Host plant. *Euonymus sieboldianus* B. in Japan (Moriuti, 1977).

***Ypsolopha parallelus* (Caradja)** 가로줄좁나방

Cerastoma parallelus Caradja, 1939, Dt. ent. Z. Iris 53: 14.

Ypsolopha parallelus: Moriuti, 1977: 84, figs 11, 229, 384, 508, 547; Moriuti, 1982, 1: 209, 2: 195, pl. 8: 22.

Ypsolophus parallelus: Moriuti, 1964: 201; Park, 1994: 325.

Wingspan 20–24 mm. For the description of this species, see Moriuti (1977).

Materials examined. [KNA] Seoul- 4 ♀, Hongleung, 20 VI 1996, 1 ♂, 3 ♀, 12 X 1996, 2 ♀, 10 X 1996, 1 ♀, 14 VII 1997, 1 ♀, 17 X 1996, 2 ♀, 21 X 1996, 1 ♀, 24 X 1996, 1 ♂, 28 X 1996, 1 ♀, 14 X 1998, 1 ♂, 3 VI 1998, 2 ♀, 24 VI 1998, 1 ♂, 30 IX 1998, 2 ♀, 28 X 1998, 1 ♀, 14 VII 1997, 1 ♀, 31 X 1996 (BK Byun). GG- 1 ♀, Gwangleung, 17 VI 1994, 2 ♀, 9 X 1998 (BK Byun); 2 ♂, Gwangleung, 25 VI 1999 (TS Kwon & BK Byun). JN- 1 ♀, Naju, 6 VI 1996 (SK Jang). [CIS] GW- 1 ex, Chuncheon, 13 VI 1989 (KT Park & BK Byun); 1 ♀, Chuncheon, 10 V 1990 (KT Park); 1 ♂, Mt. Samak-san, 22 VI 1989 (KT Park); 1 ♀, Mt. Samak-san, 25 IX 1989 (KT Park); 1 ♂, 1 ♀, Mt. Samak-san, 20 X 1989 (KT Park). [NIAS] Seoul- 1 ♂, 2 ♀, Hongleung, 14 X 1996 (BK Byun); 4 ♀, Hongleung, 31 X 1996 (BK Byun).

Distribution. Korea, Japan, and N. China.

Host plant. *Quercus serrata* T. in Japan (Moriuti, 1977).

***Ypsolopha parenthesesellus* (Linnaeus, 1761) 갈색줄무늬좀나방 (신칭)**

(Figs 3, 5, 8)

Phalaena Tinea parenthesesella Linnaeus, 1761, Fauna Suec., ed. 2: 367; Linnaeus, 1767: 890; Gmelin, 1790: 2594. TL: [Sweden]

Alucita costella Fabricius, 1775, Syst. Ent.: 668; Fabricius, 1781: 308; Fabricius, 1787: 254; Fabricius, 1794: 336.

Alucita maculella Fabricius, 1794, Ent. Syst. 3(2): 333.

Cerastoma costella: Meyrick, 1914: 55; Meyrick, 1928: 801; Issiki, 1932: 1490, fig. 2949; Issiki, 1950: 447, fig. 205; Issiki, 1957: 21, pl. 3, fig. 69.

Cerostoma takamukui Matsumura, 1931, 6000 Ill. Ins. Japan: 1103. TL: Yanakawa, Chikugo, Japan.

Macrochila parenthesesella: Stephens, 1829: 199; Stephens, 1829: 51.

Tinea fissella Hübner, 1796, Samml. Eur. Schmett. 8, pl. 16, fig. 106.

Tinea judeichiella Ratzeburg, 1868, Waldverderbnis 2: 418, pl. 4, fig. 6.

Tinea ochrella Hübner, 1793, Samml. Aus. Vögel u. Schmett. fig. 50.

Ypsolopha parenthesesellus: Moriuti, 1977: 90, figs 15, 16, 233, 388, 510, 548.

Ypsolophus costatus Fabricius, 1798, Ent. Syst. Suppl.: 506.

Ypsolophus fissus Haworth, 1829, Lep. Brit. 4: 543.

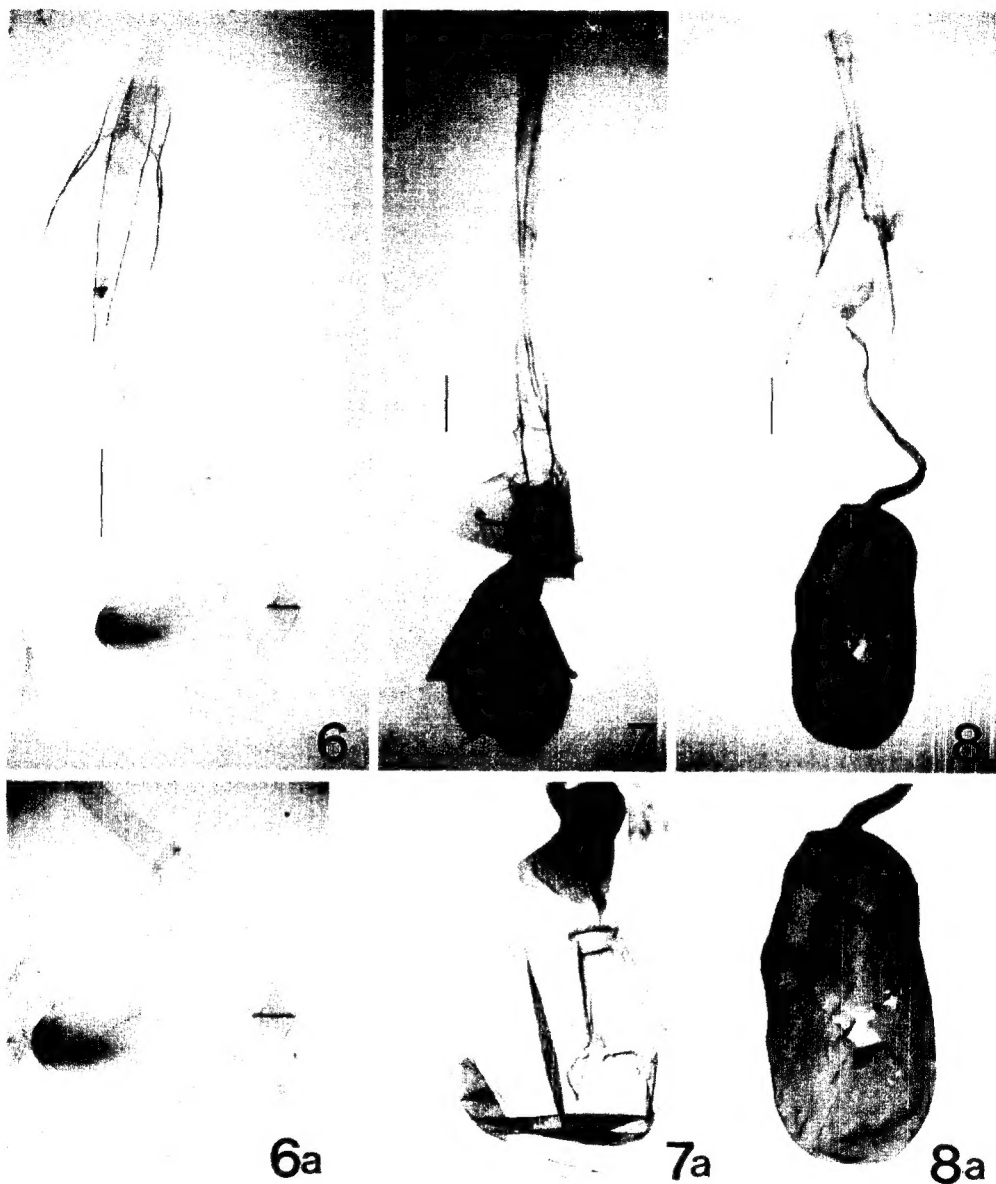
Ypsolophus maculatus Fabricius, 1798, Ent. Syst. Suppl.: 510.

Ypsolophus ochroleucus Haworth, 1829, Lep. Brit. 4: 542.

Ypsolophus parenthesesella: Inoue, 1954: 35; Okano, 1959: 274, pl. 181, fig. 24.

Ypsolophus takamukui: Inoue, 1954: 35.

Wingspan 16–19 mm (Fig. 3). Color and marking of the forewing variable. Head light ochreous or grayish ochreous, with face light yellowish white; orbit dark fuscous. Antenna grayish fuscous, becoming darker apically, and imperfectly ringed with yellowish white on apical 4/5: in some specimens dark fuscous, dotted with yellowish white; scape grayish fuscous or dark fuscous. Palpus grayish fuscous, with upper side light yellowish white. Thorax fuscous or purplish fuscous. Forewing with R_4 and R_5 separated or stalked; in general, divided into two parts transversally; upper part pale brownish ochreous, more or



Figs 6-8. Female genitalia: 6. *Ypsolopha cristatus* Moriuti; 7. *Ypsolopha japonicus* Moriuti; 8. *Ypsolopha parenthesellus* (Linnaeus) (Scale bars: 0.5 mm).

less suffused with gray, and lower part bronzy, fuscous, or dark brownish ochreous, sometimes with narrow purplish suffusion along fold; scattering black or purplish black dots or spots; a white longitudinal streak in middle of cell, extending from near base to middle, but rarely a whitish longitudinal streak below fold from base of dorsum to tornus; cilia concolorous, the outer half being little paler. Hindwing gray, slightly paler towards base; cilia pale gray, slightly yellowish-tinged, with gray basal shade.

Male genitalia (Figs 5, 5a). Valva narrow, elongate; apex pointed. Vinculum large; saccus short, rather broad. Aedeagus slightly longer than valva, narrow, bending about middle; cornuti consist of two rows of many spinules.

Female genitalia (Figs 8, 8a). Membrane between papilia analis and 8th abdominal segment short. Ostium bursae wide; antrum membranous, large, cup-shaped. Ductus bursae very narrow, densely studded with denticles in ductus seminalis and corpus bursae. Ductus seminalis arising from antrum. Signum with two ridges.

Materials examined. [KNA] GG- 3 ♀, Gwangleung, 17 VI 1994 (BK Byun & HP Jeong); 1 ♂, 3 ♀, Gwangleung, 22 IX 1994 (BK Byun). [CIS] GW- 1 ex, Mt. Gyeong-bang-san, 2 VIII 1989 (KT Park). [UIB] GG- 1 ♂, Mt. Hwaya-san, 1 IX 1997 (Paek, Lee & Ahn), 3 ♂, 19 IX 1997 (Paek, Lee & Ahn); 1 ♀, Mt. Mani-san, 27 IX 1997 (BW Lee). [NIAS] Seoul- 1 ♀, Hongleung, 3 VI 1998 (BK Byun). GG- 2 ♀, Gwangleung, 10 VI 1998 (BK Byun).

Distribution. Korea (new record), Japan, and Europe.

Host plants. *Quercus serrata* T. and *Q. acutissima* C. in Japan (Moriuti, 1977). *Fagus* sp. in Europe (Werner, 1958).

Biology. According to Moriuti (1977) "Two generations a year in Europe, larva appears from May to July. larva is solitary, in a slight web amongst leaves, pupating in a spindle-shaped brown cocoon between leaves or twigs and adults emerged after mid May".

***Ypsolopha strigosus* (Butler, 1879) 흰줄좁나방**

Cerostoma strigosa Butler, 1879, Ill. Spec. Lep. Het. Coll. Br. Mus. 3: 81, pl. 60: 12.

Ypsolopha strigosus: Moriuti, 1977: 103, figs 25, 161, 240, 396; Moriuti, 1982: 211, 2: 195, pl. 8: 32; Park, 1983a: 67; Park, 1983b: 528, 926, pl. 35: 603, fig. 183; Park, 1994: 325.

Wingspan 23–26 mm. For the description of this species, see Moriuti (1977) and Park (1983b).

Materials examined. [CIS] GW- 1 ♂, Sogumgang, 6 VII 1988 (KT Park). GG- 1 ♀, Mt. Myongji-san, 25 VI 1983 (KT Park). [KNA] GW- 1 ♀, Mt. Palbong-san, 5 VI 1990 (BK Byun). [UIB] GW- 1 ♂, Mt. Gyeong-bang-san, 15 VIII 1996 (Paek, Lee & Ahn). GG- 27 ♂, 3 ♀, 2 exs, Mt. Gwangduk-san, 20 VII 1996 (Bae, Paek, Lee, Ahn & Jeon). JJ- 1 ♂, Mt. Hanra-san, 12 VIII 1997 (Lee & Ahn).

Distribution. Korea, Japan, N. China.

***Ypsolopha yasudai* Moriuti, 1964 작은갈고리좁나방**

Ypsolopha yasudai Moriuti, 1964, Kontyû 32: 204, fig. 14, pl. 7: 4; Moriuti, 1977: 98, figs 22, 237, 392; Moriuti, 1982, 1: 210, 2: 195, pl. 8: 31; Park, 1983a: 66; Park, 1983b: 527, 926, pl. 35: 602, fig. 182; Park, 1994: 325. TL: Togesimizu, Mutu, Japan.

Wingspan 17–18 mm. For the description of this species, see Moriuti (1977) and Park (1983b).

Materials examined. [KNA] GW- 1 ♂, Jiamri, Chuncheon, 15 VI 1995 (BK Byun). [UIB] GW- 1 ♂, Mt. Daeduk-san, 11 VII 1997 (YS Bae & NH Ahn). GG- 3 ♂, 4 ♀, Mt. Soyo-san, 7 VII 1996 (Bae, Paek, Lee & Ahn); 2 ♂, 2 ♀, Mt. Mani-san, 20 VI 1997 (Paek & Lee). [NIAS] [GG] 1 ex, Mt. Suri-san,

9 VI 1981 (YY Ha). [GW] 1ex, Mt. Chiak-san, 23 VI 1977 (KT Park).

Distribution. Korea and Japan.

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